

METRIC

MIL-DTL-83522/17C

28 June 2013

SUPERSEDING

MIL-C-83522/17B

11 May 1995

## DETAIL SPECIFICATION SHEET

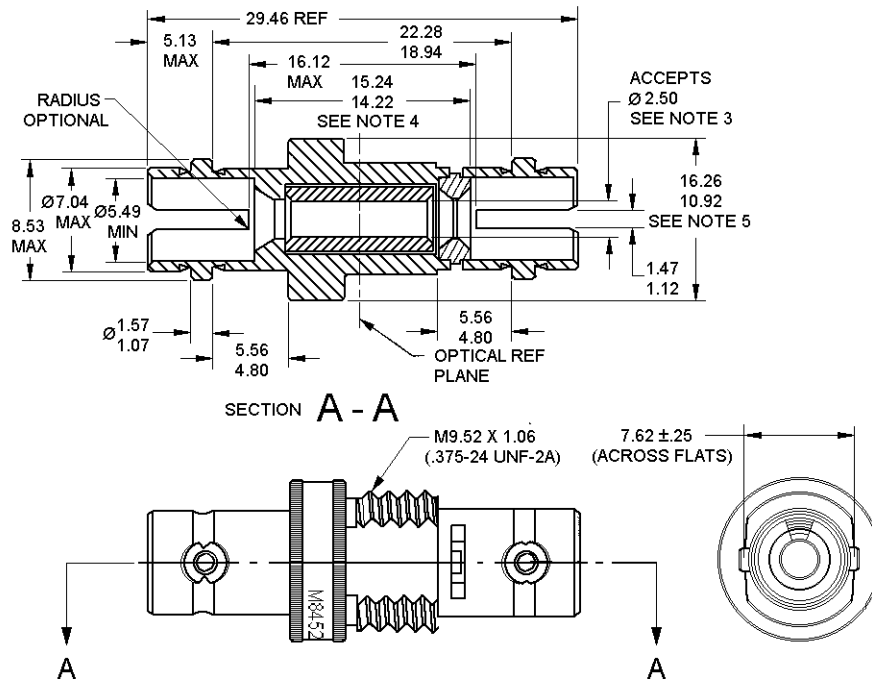
CONNECTOR, FIBER OPTIC, SINGLE TERMINUS, ADAPTER, BAYONET COUPLING  
(ST STYLE), 2.5 MILLIMETER DIAMETER FERRULE, BULKHEAD PANEL MOUNT

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-83522.

AMSC N/A

FSC 6060



## NOTES:

1. Dimensions are in millimeters.
2. Inch equivalents are given for general information only.
3. The adapter is shown with an alignment sleeve which will accept a ferrule diameter of 2.498 to 2.500 mm for MM and 2.4985 to 2.4995 mm for MM/SM.
4. This dimension is the shoulder-to-shoulder distance inside the adapter. This dimension does not apply to the adapter key slot.
5. Adapter may be supplied with a square flange. The dimensions for the sides of the square flange are the same as the diameter of the round flange.

FIGURE 1. Dimensions and configuration.

## REQUIREMENTS:

Metals. Except for the alignment sleeve, the alignment sleeve retention clip and the dust covers, the adapter housing and other components are to be made of stainless steel, nickel plated brass or another metal that is approved by the qualification activity.

Alignment sleeve material: Ceramic (zirconia).

Dust covers. Shall be thermoplastic and shall be provided on each end of the adapter.

Hex nut and internal tooth lock washer. Stainless steel or nickel-plated brass.

Dimensions and configuration. See figures 1 and 2.

Optical requirements:

Optical loss (attenuation). Not applicable.

Nuclear radiation. Not applicable

Weight. 20 grams maximum.

Safety wire holes. Not applicable.

Force to engage and disengage:

Longitudinal force. Not applicable.

Torque. Not applicable.

Coupling mechanism retention force. Not applicable.

Water submersion. Not applicable.

Fiber optical cable. Not applicable.

Ozone exposure. Not applicable.

Fluid immersion. Not applicable.

Shock. Shock shall be performed in accordance with MIL-S-901. Maximum allowed reduction in optical transmittance shall not exceed 0.5 dB for a duration of 50 microseconds or less with the following exceptions: For SM/MM connectors assembled on single mode fiber, the maximum allowed reduction in optical transmittance shall not exceed 0.5 dB for a duration of 1 second or less during the test. For MM connectors assembled on multimode fiber and for the side axis only, the maximum allowed reduction in optical transmittance shall not exceed 0.5 dB for a duration of 500 microseconds or less during the test..

High impact shock. This test is applicable to all adapters. For adapters tested with connectors assembled on single-mode fiber, signal discontinuity is not applicable during shock. For adapters tested with connectors assembled on multimode fiber, signal discontinuity is applicable during shock.

Residual magnetism. Not applicable.

Adapter accessories. Each adapter shall be packaged with a minimum of one hex nut, one internal tooth lock washer, and two dust covers.

Group A inspection. During group A inspection, all dimensions may be verified on a sampled basis. Weight may also be verified on a sampled basis. The qualifying activity shall be notified of all failures during any sampled inspections.

The adapter mates with two MIL-DTL-83522/16 plug connectors.

**TABLE I. MIL-DTL-83522/16-ANX, -ANY, -DNX & -DNY ST connector MIL-DTL-83522/17-NX & -NY ST-TO-ST adapter Initial qualification, re-qualification: change in design/material.**

Test performed	Optical test done as part of test performed	Initial qualification for M83522 /16 & /17	Re-qualification for M83522/16 & /17			
			Initial qualification ANX & ANY after DNX & DNY qualification	Change in boot material	ANX, ANY change in boot insert design	Change in metallic material <u>5/</u>
<b>Group 1 (10 mated pair) <sup>13/, 14/</sup></b>						
Visual & mechanical		X	X			X
Size		X	X <sup>8/</sup>	X <sup>8/</sup>	X <sup>8/</sup>	X <sup>8/</sup>
Weight		X	X	X	X	X
Identification marking		X	X	X	X	X
Workmanship		X	X	X	X	X
Functional						
Cable strain relief						
Force to engage/disengage						
Coupling proof torque						
Coupling mech retention force						
Optical-8SM & 4MM mated pair						
Insertion loss	OIL	X	X	X	X	X
Return loss-SM only	ORL	X	X			X
Ambient light susceptibility		X				
<b>Group 2 (4 mated pair)</b>						
Tensile loading	OOT-a/d	X	X		X	X
Cable strain relief						
Flex life	OOT-d	X	X	X		
Twist	OOT-a	X				X
Mating durability	OOT-d	X	X			X
Return loss (SM only)	ORL	X	X			X
Impact	OOT-a	X	X			
Insertion loss verification	OIL	X	X			
Vibration	MSG/OOT-a	X				
Mechanical shock-4SM & 4MM <sup>13/</sup>	MSG/OOT-d	X	X		X	X
Water submersion	OOT-d		X			
<b>Group 3 (4 mated pair)</b>						
Thermal shock	OOT-a	X				
Temperature humidity cycling	OOT-d	X		X		X
Temperature cycling	OOT-d	X	X			X
Life aging	OOT-a	X		X		
Return loss (SM only)	ORL	X				
Pressure altitude	OOT-d	X	X			
Insertion loss verification	OIL	X				
Sand and dust	OOT-d					
Force to engage/disengage						
Identification marking		X				

**TABLE I. MIL-DTL-83522/16-ANX, -ANY, -DNX & -DNY ST connector MIL-DTL-83522/17-NX & -NY ST-TO-ST adapter Initial qualification, re-qualification: change in design/material – Continued.**

Test performed	Optical test done as part of test performed	Initial qualification for M83522 /16 & /17	Re-qualification for M83522/16 & /17			
			Initial qualification ANX & ANY after DNX & DNY qualification	Change in boot material	ANX, ANY change in boot insert design	Change in metallic material <sup>5/</sup>
<b>Group 4 (2 mated pair &amp; parts)</b>						
Nuclear radiation resistance <sup>9/</sup>	OOT-d					
Fluid immersion (2 mated pair)						
Salt spray (2 mated pair)		X			X <sup>6/</sup>	X
Flammability (1 mated pair)	OOT-a	X		X		
Fungus resistance <sup>10/</sup>		X	X <sup>6/</sup>	X	X <sup>7/</sup>	
Ozone exposure <sup>10/</sup>						
<b>Group 5 – <sup>11/, 12/</sup></b>						
Thermal vacuum outgassing						
Residual magnetism						
Odor						
Toxicity						

**NOTES:**

1. OOT = Change in optical transmittance.

-a = measurement after test,

-d = measurement during & after test.

2. OIL = Insertion loss.

3. ORL = Return loss.

4. MSG = Signal discontinuity.

<sup>5/</sup> Change in material for this note relates to a change in the metallic material for the ST connector bayonet cap, barrel, and (if metal) boot insert and for the ST-to-ST adapter housing.

<sup>6/</sup> If there is a change in material.

<sup>7/</sup> If the material change is a non-metal one.

<sup>8/</sup> Perform a subset of dimensional inspection. Subset = subset of dimensional inspections that pertain to part (such as barrel, bayonet cap or boot) being changed.

<sup>9/</sup> Either an additional four mated pair can be fabricated for this test or the Group 3 samples may be used after completion of Group 3 tests.

<sup>10/</sup> Polymeric parts from 1 mated pair.

<sup>11/</sup> Two mated pair from Group 2.

<sup>12/</sup> NASA will perform these tests.

<sup>13/</sup> When performing initial qualification or re-qualification for both single mode (SM) and for multimode (MM), four MM Mated pairs must undergo Group 1 and shock testing only. Ten single mode mated pair undergo specified inspections/tests. This multimode qualification by similarity is applicable if only differences, between SM and MM, are ferrule diameter dimension, ferrule hole diameter dimension, boot color (optional) and markings.

<sup>14/</sup> Group 1 mated pair are to be used for Groups 2, 3 and 4.

Patch panel thickness. ST-to-ST adapter is mounted to a patch panel with a 4.0 mm (0.16 inch) minimum thickness.

Part or Identifying Number (PIN) is a new term encompassing previous terms used in specifications such as part number, type designator, or identification number.

PIN: M83522/17 – X X X

Temperature

Fiber size

Additional considerations

Temperature:

H – High temperature

N – Normal temperature

Fiber size

Y (type II) (125 µm, MM/SM)

Z (type I) (140 µm, MM)

Additional considerations:

S – Qualified to space flight Requirements.

TABLE II. PIN supersession data.

Superseded PIN	Superseding PIN
M83522/17 – HX	M83522/17 – HY
M83522/17 – NX	M83522/17 – NY

NOTE: M83522/17-NX may be supplied for 6 months from the date of this specification sheet amendment to allow manufacture suppliers to be depleted.

Qualification by similarity- change in fiber size from single mode to multimode: Manufacturers who are qualified under this specifications sheet for a particular temperature and single mode fiber, and whose 62.5/125 micron multimode ST-to-ST adapter passes insertion loss and shock specified herein, are qualified under this specification sheet for 62.5/125 micron multimode and 100/140 micron multimode fiber sizes. Testing is to be performed on four mated pair.

Qualification by similarity- change in the ST-to-ST adapter alignment sleeve: Manufacturers who are qualified under this specification sheet for a particular temperature, fiber size and alignment sleeve, and whose ST-to-ST adapter with an alternate alignment sleeve passes the size (partial), weight, workmanship (include mating check), insertion loss (10 matings, no cut back), mating durability, impact, shock, thermal shock, temperature cycling, and flammability specified herein, are qualified under this specification sheet for the change in the alignment sleeve. This qualification by similarity is valid if the only difference between the previously qualified MIL-DTL-83522/17 ST-to-ST adapter and the one being tested is a change in materials. Size inspection, weight and workmanship are to be performed on 20 ST-to-ST adapters. The remainder of the testing is to be performed on four mated pair. Test is to be waived depending on alignment sleeve configuration and material.

Qualification by similarity; change in housing material: Manufacturers who are qualified under this specification sheet for a particular temperature and fiber size, and whose ST-to ST adapter with an alternate housing material passes the size, weight, identification marking, workmanship, insertion loss, temperature humidity cycling, temperature cycling and salt spray specified herein, are qualified under this specification sheet for the change in housing material. This qualification by similarity is valid if the only difference between the previously qualified MIL-DTL-83522/1 ST –to ST adapter and the one being tested is a change in housing material. If dimensions have changed (i.e., nominal and tolerances are not eh same or tighter), the ST- to ST adapter must pass shock also, Size inspection, performed on 30 St-to-ST Adapters. The remainder of the testing is to be performed on four mated pair. Test is to be performed in the sequence listed.

Qualification by similarity- change in fiber size from multimode to single mode: Manufacturers who are qualified under this specification sheet for a particular temperature and multimode fiber size, and whose single mode fiber six passes the tests specified herein for MIL-DTL-83522/17 with the exception of dust, salt spray and fungus, are qualified under this specification sheet for the single mode fiber size. This qualification by similarity is valid if the only difference between the previously qualified MIL-DTL-83522/17 ST-to-ST adapter and the one being tested is a change in the fiber size.

Referenced documents. In addition to MIL-DTL-83522, this document references the following:

MIL-DTL-83522/16      MIL-S-901

Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army – CR  
Navy – SH  
Air Force – 85  
DLA – CC  
NASA – NA

Preparing activity:

DLA – CC

(Project 6060-2013-003)

Review activities:

Navy – AS  
Air Force – 13, 19, 93, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST online database at <http://assist.dla.mil>.